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(54) 【考案の名称】 チェーン等のテンショナ装置

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(57) 【実用新案登録請求の範囲】

【請求項1】 テンショナの押圧軸によってテンショナレバーをチェーン、ベルト等に押圧し、前記チェーン、ベルト等に緊張力を与えるテンショナ装置において、前記押圧軸の先端を軸の長手方向に対し略々直角な平面にするとともに、前記平面に接触する面を円弧面にして該円弧面の両側に前記押圧軸先端の外れ防止壁を形成したパッドを前記テンショナレバーにスナップ装脱可能に設けたことを特徴とする、チェーン等のテンショナ装置。

【考案の詳細な説明】

【0001】

【産業上の利用分野】 本考案は、循環移動中のチェーン、ベルト等に常時適正な緊張力を与えるためのテンショナ装置に関する。

【0002】

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【従来の技術】 従来、テンショナ装置は、例えば、自動車のクランクシャフト21(図7参照)とエンジンバルブ(図示省略)の開閉を行なうカム軸22との間で回転を伝達するチェーン23に常時適正な緊張力を与え、チェーン23の振動を少なくしている。このテンショナ装置20は、テンショナ24の押圧軸25の押圧力でテンショナレバー26をチェーン23に押し付けている。

【0003】 押圧軸25は、スプリング27によって常時突出方向に付勢され、ラック28とカム29との関係で没入方向への移動が阻止されているが、ラック28の歯の1つがカム29を通過しない程度の距離だけ往復微動するだけの「がた」を有している。又、押圧軸25はテンショナレバー26に直接接触せず、押圧軸25の先端に設けられた樹脂製のパッド30を介して接触している。このパッド30は図8に示すように、押圧軸25の

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先端に圧入された平板31に組込まれている。

【0004】さらに、押圧軸25は、図7に示すように、テンシヨナレバー26の遊端側を押圧しており、チェーンの振動によって力Fを受けている。この力Fは押圧軸25の軸方向に対して交差する方向に加わるため、軸方向の分力F1と軸方向に対して直角方向の分力F2とに分けることができる。

【0005】

【考案が解決しようとする課題】このようなテンシヨナ装置20は次の問題点を有している。

(1) パッド30を押圧軸25に取付けるための平板31を押圧軸25の先端に圧入しなければならず、製作に手間を要する。

(2) 平板31は一般に薄いため、使用中に加わる力や振動によって圧入部分から外れることがある。

(3) 押圧軸25は、チェーン23が循環移動している間、チェーン23の振動によって絶えず細かく振動しているテンシヨナレバー26から横方向の分力F2を繰り返し受け、前記「がた」分だけ往復微動している。このため、押圧軸25とフレーム32との接触部分(図7中矢印Aで示す部分)に摩耗が生じ、フレーム32に対し押圧軸25ががたつき、チェーン23に適正な緊張力を与えることができなくなることがある。さらに、押圧軸25のがたつきによって、ラック28の歯先とカム29の先端とが互いに接触すると、押圧軸25がフレーム32に押し付けられた状態になり、スプリング27の押圧によって突出しなくなり、テンシヨナ24の機能が損なわれることがある。また、パッド30は押接面が摺接摩損によって変形し又は押圧力によって損壊した場合にパッドのみを簡単に交換することが困難である。

【0006】

【課題を解決するための手段】本考案は、テンシヨナの押圧軸によってテンシヨナレバーをチェーン、ベルト等を押圧し、前記チェーン、ベルト等に緊張力を与えるテンシヨナ装置において、前記押圧軸の先端を軸の長手方向に対し略々直角な平面にするとともに、前記平面に接触する面を円弧面にして該円弧面の両側に前記押圧軸先端の外れ防止壁を形成したパッドを前記テンシヨナレバーにスナップ装脱可能に設けたテンシヨナ装置により、前記の課題を解決したものである。

【0007】

【作用】押圧軸先端の平面とテンシヨナレバーに取付けたパッドの円弧面とが接触するため、チェーンの振動によって押圧軸がテンシヨナレバーから受ける力の方向は軸と略々平行な方向になる。このため、押圧軸はテンシヨナのフレームに押圧されることが少なくなる。そして、前記円弧面の両側に形成した前記押圧軸先端の外れ防止壁は、チェーンの振動に対して、前記押圧軸先端をパッドの円弧面に押圧保持する。

【0008】

【実施例】以下、本考案の実施例を図面に基づいて説明する。テンシヨナ装置40は、図1に示すように、自動車のクランクシャフト21とエンジンバルブ(図示省略)の開閉を行なうカム軸22との間で回転を伝達するチェーン23に常時適正な緊張力を与え、チェーン23の振動を少なくする装置である。

【0009】テンシヨナ41はスプリング42によってフレーム43から突出方向に常時付勢された押圧軸44を有している。この押圧軸44は、従来のテンシヨナの押圧軸と同様にラック45とカム46との関係で没入方向への移動が阻止されているが、ラック45の歯の1つがカム46を通過しない程度の距離だけ往復微動するだけの「がた」を有している。押圧軸44の先端は長手方向に対して略々直角な平面になっている。テンシヨナレバー47は、アルミ製のアーム58と樹脂製のシュー59とを有しており、前記平面48と接触する面50を円弧面に形成したパッド49が具えられている。

【0010】パッド49は、樹脂製であり、図3、図4に示すように、円弧面50の両側には一対の外れ防止壁51、51が、円弧面50の背面には一対のスナップ片52、52がそれぞれ形成されている。外れ防止壁51、51は、円弧面50に接触する押圧軸44の先端と円弧面50とが円弧面50の幅方向に相対移動し、押圧軸44が円弧面50から外れないように押圧軸44の先端を規制する壁である。

【0011】パッド49は、一対のスナップ片52、52をアーム58の孔53に挿入し、スナップ片52、52の先端に形成された鍔54、54を孔53の背面壁55に係合させることによってアーム58に取付けられるようになっている。さらに、パッド49は、アーム58に形成された一対の平行突条56、56によって回転止めされている。

【0012】以上のパッド49の取付け構造57は一対のスナップ片52、52と孔53とで構成されているが、図5、図6に示す取付構造77のように、円弧面70の両側から突出した一対の弾性爪80、80をアーム78の断面I字状の部分の両側81、81にスナップ係合させて取付けるような構造であってもよい。このパッド69にも一対の外れ防止壁71、71が円弧面70の両側に形成されている。さらに、アーム78には樹脂製のシュー79が具えられている。この取付構造77は、テンシヨナレバー67のアーム78の厚み(T)が薄い場合でも用いることができる。

【0013】従って、押圧軸とテンシヨナレバーとは平面と円弧面とで接触しているため、チェーンの振動によってテンシヨナレバーが振動し押圧軸に力F3(図2参照)が作用しても、その力の方向は軸と平行な方向であり、押圧軸と交差する方向には殆ど加わらない。このため、押圧軸とフレームとの間に摩耗が生じることがなく、チェーンに常時適正な緊張力を与えることができ

る。さらに、ラックとカムの啮合が不確実になるようなことがなく、押圧軸の突出動作の円滑性が損なわれるようなことはない。なお、以上のテンショナ装置はチェーンに適正な緊張力を与えるためのものであるが、ベルトについても同様に適正な緊張力を与えることができる。

【0014】

【考案の効果】本考案のテンショナ装置は次の効果を奏する。

(1) 押圧軸とテンショナレバーとの間に介在するパッドをテンショナレバーにスナップ装脱可能に設けたので、パッドの取付け構造が簡素化されるとともにパッドの交換をワンタッチで簡単に行うことができ、パッドの組込み作業を容易に行なうことができるようになったので、パッド押接面の摩損および変形時の交換がきわめて簡単に行われ、チェーンに対する適正な緊張力の保持を迅速且つ確実にすることが可能になる。

(2) 押圧軸に軸と交差する方向の力が殆ど加わらなくなり、押圧軸とフレームとの間の摩耗が減少する。これによって、押圧軸はフレームに対してがたつくようなことがなくなり、適正な緊張力を与えることができる。

(3) さらに、パッドの円弧面両側には押圧軸先端がチェーンの振動によってもパッドの円弧面により側方に外れないように外れ防止壁で規制しているので、押圧作用は、確実に押圧軸に平行な方向でテンショナレバーに付与される。

【図面の簡単な説明】

*【図1】 一部断面で表わした本考案のテンショナ装置である。

【図2】 テンショナの押圧軸にテンショナレバーの力が加わっている状態の説明図である。

【図3】 パッドの取付け構造の第1実施例斜視図である。

【図4】 テンショナにパッドが取付けられた図3の状態において、テンショナの長手方向の部分断面図である。

10 【図5】 パッドの取付け構造の第2実施例斜視図である。

【図6】 テンショナにパッドが取付けられた図5の状態において、テンショナの長手方向と直角な方向の部分断面図である。

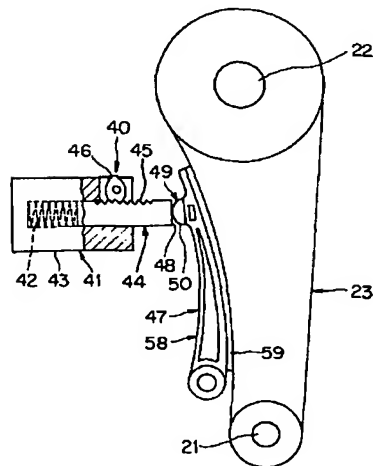
【図7】 一部断面で表わした従来のテンショナ装置である。

【図8】 従来のパッドの取付け構造において、組立順序を示す斜視図である。

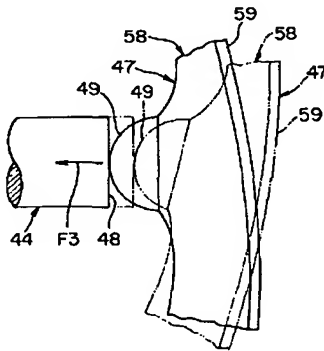
【符号の説明】

20	2 3	チェーン	4 0	テン
		ショナ装置		
	4 1	テンショナ	4 4	押圧
		軸		
	4 7, 6 7	テンショナレバー	4 8	平面
	4 9, 6 9	パッド	5 0, 7 0	円弧
		面		

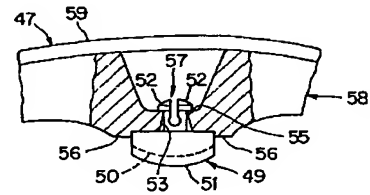
【図1】



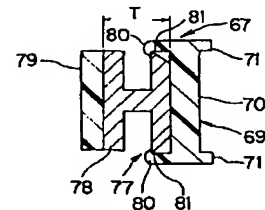
【図2】



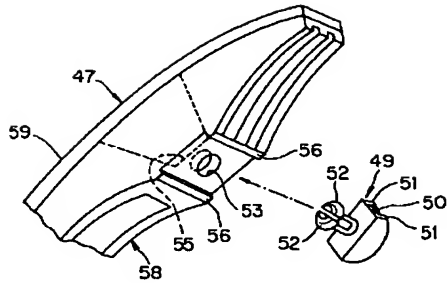
【図4】



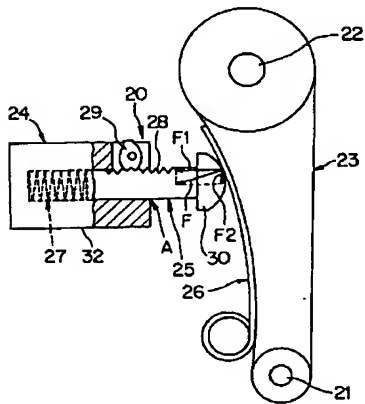
【図6】



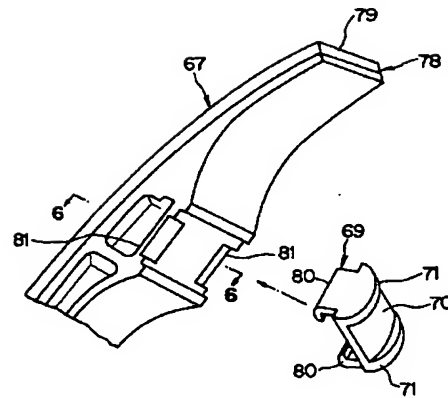
【図3】



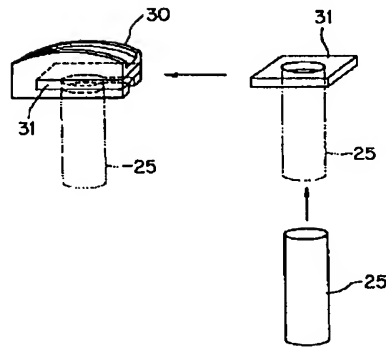
【図7】



【図5】



【図8】



フロントページの続き

- (56)参考文献 実開 昭51-58270 (J P, U)
 実開 昭51-138672 (J P, U)
 実開 昭64-3152 (J P, U)

* NOTICES *

Utility Model

JP25-0896

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CLAIMS

(57) [Utility model registration claim]

[Claim 1] the tensioner equipment which presses a tensioner lever to a chain, a belt, etc. and gives the strain force to the aforementioned chain, a belt, etc. with the press shaft of tensioner -- setting -- the nose of cam of the aforementioned press shaft -- the longitudinal direction of a shaft -- receiving -- **** -- while making it a right-angled flat surface Tensioner equipments characterized by preparing the pad which used the field in contact with the aforementioned flat surface as the circular face, and formed the blank prevention wall at the aforementioned nose of cam of a press shaft in the both sides of this circular face in the aforementioned tensioner lever possible [snap ****], such as a chain.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed explanation of a design]

[0001]

[Industrial Application] This design is related with the tensioner equipment for giving the always proper tonus force to the chain under circulation movement, a belt, etc.

[0002]

[Description of the Prior Art] Conventionally, tensioner equipment gives the always proper tonus force to the chain 23 which transmits rotation between the crankshaft 21 (refer to drawing 7) of an automobile, and the cam shaft 22 which performs opening and closing of an engine valve (illustration ellipsis), and lessens vibration of a chain 23. This tensioner equipment 20 has forced the tensioner lever 26 on the chain 23 by the press force of the press shaft 25 of tensioner 24.

[0003] The press shaft 25 has only " in which only the distance of the grade to which one of the gear teeth of a rack 28 does not pass a cam 29 carries out both-way jogging", although it is always energized in the protrusion direction and movement in the devotion direction is prevented by the relation between a rack 28 and a cam 29 with the spring 27. Moreover, the press shaft 25 does not contact the tensioner lever 26 directly, but touches through the pad 30 made of a resin prepared at the nose of cam of the press shaft 25. This pad 30 is built into the plate 31 pressed fit at the nose of cam of the press shaft 25 as shown in drawing 8 .

[0004] Furthermore, as shown in drawing 7 , the press shaft 25 is pressing the free end side of the tensioner lever 26, and has received Force F by vibration of a chain. Since this force F is added in the direction which crosses to the shaft orientations of the press shaft 25, it can be divided into the component of a force F2 of the right-angled direction to the component of a force F1 of shaft orientations, and shaft orientations.

[0005]

[Problem(s) to be Solved by the Device] Such tensioner equipment 20 has the following trouble.

(1) The plate 31 for attaching a pad 30 in the press shaft 25 must be pressed fit at the nose of cam of the press shaft 25, and manufacture takes time and effort.

(2) Since a plate 31 is generally thin, it may separate from a pressing portion by the force and vibration which are added while in use.

(3) the component of a force F2 of the tensioner lever 26 which is vibrating finely continuously by vibration of a chain 23 while the chain 23 is carrying out circulation movement of the press shaft 25 to a longitudinal direction -- repeating -- receiving -- aforementioned "-- " -- a part -- only -- both-way jogging is carried out For this reason, wear arises into the contact portion (portion shown by the drawing 7 Nakaya mark A) of the press shaft 25 and a frame 32, the press shaft 25 shakes to a frame 32, and the proper tonus force may be unable to be given to a chain 23. Furthermore, when the addendum of a rack 28 and the nose of cam of a cam 29 contact mutually, the press shaft 25 will be pushed against a frame 32, and it projects by press of a spring 27, and is lost, and the function of tensioner 24 may be spoiled by shakiness of the press shaft 25. Moreover, a pad 30 is difficult to exchange only pads simply, when a contacting-by-pressing side deforms by slide contact wear or it destroys according to the press force. [0006]

[Means for Solving the Problem] In the tensioner equipment which this design presses a tensioner lever to a chain, a belt, etc. with the press shaft of tensioner, and gives the tonus force to the aforementioned chain, a belt, etc. the nose of cam of the aforementioned press shaft -- the longitudinal direction of a shaft -- receiving -- ****, while making it a right-angled flat surface The aforementioned technical problem is solved with the tensioner equipment which prepared the pad which used the field in contact with the aforementioned flat surface as the circular face, and formed the blank prevention wall at the aforementioned nose of cam of a press shaft in the both sides of this circular face in the aforementioned tensioner lever possible [snap ****].

[0007]

[Function] the direction of the force which a press shaft receives from a tensioner lever by vibration of a chain in order that the flat surface at the nose of cam of a press shaft and the circular face of the pad attached in the tensioner lever may contact -- a shaft and **** -- it becomes in the parallel direction For this reason, a press shaft's being pressed by the frame of tensioner decreases. And the blank prevention wall at the aforementioned

nose of cam of a press shaft formed in the both sides of the aforementioned circular face carries out press maintenance of the aforementioned press shaft nose of cam to vibration of a chain at the circular face of a pad. [0008]

[Example] Hereafter, the example of this design is explained based on a drawing. Tensioner equipment 40 is equipment which gives the always proper tonus force to the chain 23 which transmits rotation between the crankshaft 21 of an automobile, and the cam shaft 22 which performs opening and closing of an engine valve (illustration ellipsis), and lessens vibration of a chain 23, as shown in drawing 1 .

[0009] Tensioner 41 has the press shaft 44 always energized in the protrusion direction from the frame 43 with the spring 42. This press shaft 44 has only " in which only the distance of the grade to which one of the gear teeth of a rack 45 does not pass a cam 46 carries out both-way jogging", although movement in the devotion direction is prevented by the relation between a rack 45 and a cam 46 like the press shaft of the conventional tensioner. the nose of cam of the press shaft 44 -- a longitudinal direction -- receiving -- **** -- it is a right-angled flat surface The tensioner lever 47 has the arm 58 made from aluminum, and the shoe 59 made of a resin, and it has the pad 49 which formed the field 50 in contact with the aforementioned flat surface 48 in the circular face.

[0010] As a pad 49 is a product made of a resin and it is shown in drawing 3 and drawing 4 , the blank prevention walls 51 and 51 of a couple are formed in the both sides of a circular face 50, and the pieces 52 and 52 of a snap of a couple are formed in the tooth back of a circular face 50, respectively. The blank prevention walls 51 and 51 are walls which regulate the nose of cam of the press shaft 44 so that the nose of cam and circular face 50 of the press shaft 44 in contact with a circular face 50 may be displaced relatively crosswise [of a circular face 50] and the press shaft 44 may not separate from a circular face 50.

[0011] A pad 49 inserts the pieces 52 and 52 of a snap of a couple in the hole 53 of an arm 58, and is attached in an arm 58 by making the collars 54 and 54 formed at the nose of cam of the pieces 52 and 52 of a snap engage with the tooth-back wall 55 of a hole 53. Furthermore, the rotation stop of the pad 49 is carried out by the parallel protruding lines 56 and 56 of the couple formed in the arm 58.

[0012] Although the attaching structure 57 of the above pad 49 consists of the pieces 52 and 52 of a snap and holes 53 of a couple, you may be the structure where the both sides 81 and 81 of the portion of the shape of a cross section of I characters of an arm 78 are made to carry out snap engagement, and the elastic presser foot stitch tongues 80 and 80 of the couple which projected from the both sides of a circular face 70 are attached in them like the attachment structure 77 shown in drawing 5 and drawing 6 . The blank prevention walls 71 and 71 of a couple are formed also in this pad 69 at the both sides of a circular face 70. Furthermore, the arm 78 is equipped with the shoe 79 made of a resin. The thickness (T) of the arm 78 of the tensioner lever 67 can use this attachment structure 77, even when thin.

[0013] Therefore, the direction of the force is a direction parallel to a shaft, and a press shaft and a tensioner lever are hardly added in the direction which intersects a press shaft, even if a tensioner lever vibrates and the force F3 (refer to drawing 2) acts on a press shaft by vibration of a chain, since it is in contact by the flat surface and the circular face. For this reason, wear does not arise between a press shaft and a frame and the always proper tonus force can be given to a chain. As [spoil / the smooth nature of protrusion operation of a press shaft / as engagement of a rack and a cam does not become uncertain / furthermore,] In addition, although tensioner equipment [more than] is for giving the proper tonus force to a chain, the proper tonus force can be similarly given about a belt.

[0014]

[Effect of the Device] The tensioner equipment of this design does the following effect so.

(1) Since the pad which intervenes between a press shaft and a tensioner lever was prepared in the tensioner lever possible [snap ****], while the attaching structure of a pad is simplified, pads can be easily exchanged by one-touch, and it becomes possible to make quickly and reliable maintenance of the proper tonus force as opposed to [since it came to be able to carry out things, wear of a pad contacting-by-pressing side and exchange at the time of deformation are performed very simply, and] a chain, with which the nest work of a (2) The force of the direction which intersects a shaft stops almost joining a press shaft, and wear between a press shaft and a frame decreases. By this, what shakes to a frame of a press shaft is lost, and it can give the proper tonus force.

(3) Since the press shaft nose of cam separated on circular face both sides of a pad further so that it might not separate by the circular face of a pad by vibration of a chain in the side, and it has regulated with the prevention wall, a press operation is given to a tensioner lever in a direction certainly parallel to a press shaft.

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TECHNICAL FIELD

[Industrial Application] This design is related with the tensioner equipment for giving the always proper tonus force to the chain under circulation movement, a belt, etc.

[0002]

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PRIOR ART

[Description of the Prior Art] Conventionally, tensioner equipment gives the always proper tonus force to the chain 23 which transmits rotation between the crankshaft 21 (refer to drawing 7) of an automobile, and the cam shaft 22 which performs opening and closing of an engine valve (illustration ellipsis), and lessens vibration of a chain 23. This tensioner equipment 20 has forced the tensioner lever 26 on the chain 23 by the press force of the press shaft 25 of tensioner 24.

[0003] The press shaft 25 has only " in which only the distance of the grade to which one of the gear teeth of a rack 28 does not pass a cam 29 carries out both-way jogging", although it is always energized in the projection direction and movement in the devotion direction is prevented by the relation between a rack 28 and a cam 29 with the spring 27. Moreover, the press shaft 25 does not contact the tensioner lever 26 directly, but touches through the pad 30 made of a resin prepared at the nose of cam of the press shaft 25. This pad 30 is built into the plate 31 pressed fit at the nose of cam of the press shaft 25 as shown in drawing 8 .

[0004] Furthermore, as shown in drawing 7 , the press shaft 25 is pressing the free end side of the tensioner lever 26, and has received Force F by vibration of a chain. Since this force F is added in the direction which crosses to the shaft orientations of the press shaft 25, it can be divided into the component of a force F2 of the right-angled direction to the component of a force F1 of shaft orientations, and shaft orientations.

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EFFECT OF THE INVENTION

[Effect of the Device] The tensioner equipment of this design does the following effect so.

- (1) Since the pad which intervenes between a press shaft and a tensioner lever was prepared in the tensioner lever possible [snap ****], while the attaching structure of a pad is simplified, pads can be easily exchanged by one-touch, and it becomes possible to make quickly and reliable maintenance of the proper strain force as opposed to [since it came to be able to carry out things, wear of a pad contacting-by-pressing side and exchange at the time of deformation are performed very simply, and] a chain, with which the nest work of a (2) The force of the direction which intersects a shaft stops almost joining a press shaft, and wear between a press shaft and a frame decreases. By this, what shakes to a frame of a press shaft is lost, and it can give the proper strain force.
- (3) Since the press shaft nose of cam separated on circular face both sides of a pad further so that it might not separate by the circular face of a pad by vibration of a chain in the side, and it has regulated with the prevention wall, a press operation is given to a tensioner lever in a direction certainly parallel to a press shaft.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Device] Such tensioner equipment 20 has the following trouble.

- (1) The plate 31 for attaching a pad 30 in the press shaft 25 must be pressed fit at the nose of cam of the press shaft 25, and manufacture takes time and effort.
- (2) Since a plate 31 is generally thin, it may separate from a pressing portion by the force and vibration which are added while in use.
- (3) the component of a force F2 of the tensioner lever 26 which is vibrating finely continuously by vibration of a chain 23 while the chain 23 is carrying out circulation movement of the press shaft 25 to a longitudinal direction -- repeating -- receiving -- aforementioned -- -- a part -- only -- both-way jogging is carried out For this reason, wear arises into the contact portion (portion shown by the drawing 7 Nakaya mark A) of the press shaft 25 and a frame 32, the press shaft 25 shakes to a frame 32, and the proper strain force may be unable to be given to a chain 23. Furthermore, when the addendum of a rack 28 and the nose of cam of a cam 29 contact mutually, the press shaft 25 will be pushed against a frame 32, and it projects by press of a spring 27, and is lost, and the function of tensioner 24 may be spoiled by shakiness of the press shaft 25. Moreover, a pad 30 is difficult to exchange only pads simply, when a contacting-by-pressing side deforms by slide contact wear or it destroys according to the press force.

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MEANS

[Means for Solving the Problem] In the tensioner equipment which this design presses a tensioner lever to a chain, a belt, etc. with the press shaft of tensioner, and gives the strain force to the aforementioned chain, a belt, etc. the nose of cam of the aforementioned press shaft -- the longitudinal direction of a shaft -- receiving -- ****, while making it a right-angled flat surface. The aforementioned technical problem is solved with the tensioner equipment which prepared the pad which used the field in contact with the aforementioned flat surface as the circular face, and formed the blank prevention wall at the aforementioned nose of cam of a press shaft in the both sides of this circular face in the aforementioned tensioner lever possible [snap ****].

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OPERATION

[Function] the direction of the force which a press shaft receives from a tensioner lever by vibration of a chain in order that the flat surface at the nose of cam of a press shaft and the circular face of the pad attached in the tensioner lever may contact -- a shaft and **** -- it becomes in the parallel direction For this reason, a press shaft's being pressed by the frame of tensioner decreases. And the blank prevention wall at the aforementioned nose of cam of a press shaft formed in the both sides of the aforementioned circular face carries out press maintenance of the aforementioned press shaft nose of cam to vibration of a chain at the circular face of a pad.
[0008]

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EXAMPLE

[Example] Hereafter, the example of this design is explained based on a drawing. Tensioner equipment 40 is equipment which gives the always proper tonus force to the chain 23 which transmits rotation between the crankshaft 21 of an automobile, and the cam shaft 22 which performs opening and closing of an engine valve (illustration ellipsis), and lessens vibration of a chain 23, as shown in drawing 1 .

[0009] Tensioner 41 has the press shaft 44 always energized in the protrusion direction from the frame 43 with the spring 42. This press shaft 44 has only " in which only the distance of the grade to which one of the gear teeth of a rack 45 does not pass a cam 46 carries out both-way jogging", although movement in the devotion direction is prevented by the relation between a rack 45 and a cam 46 like the press shaft of the conventional tensioner. the nose of cam of the press shaft 44 -- a longitudinal direction -- receiving -- **** -- it is a right-angled flat surface The tensioner lever 47 has the arm 58 made from aluminum, and the shoe 59 made of a resin, and it has the pad 49 which formed the field 50 in contact with the aforementioned flat surface 48 in the circular face.

[0010] As a pad 49 is a product made of a resin and it is shown in drawing 3 and drawing 4 , the blank prevention walls 51 and 51 of a couple are formed in the both sides of a circular face 50, and the pieces 52 and 52 of a snap of a couple are formed in the tooth back of a circular face 50, respectively. The blank prevention walls 51 and 51 are walls which regulate the nose of cam of the press shaft 44 so that the nose of cam and circular face 50 of the press shaft 44 in contact with a circular face 50 may be displaced relatively crosswise [of a circular face 50] and the press shaft 44 may not separate from a circular face 50.

[0011] A pad 49 inserts the pieces 52 and 52 of a snap of a couple in the hole 53 of an arm 58, and is attached in an arm 58 by making the collars 54 and 54 formed at the nose of cam of the pieces 52 and 52 of a snap engage with the tooth-back wall 55 of a hole 53. Furthermore, the rotation stop of the pad 49 is carried out by the parallel protruding lines 56 and 56 of the couple formed in the arm 58.

[0012] Although the attaching structure 57 of the above pad 49 consists of the pieces 52 and 52 of a snap and holes 53 of a couple, you may be the structure where the both sides 81 and 81 of the portion of the shape of a cross section of I characters of an arm 78 are made to carry out snap engagement, and the elastic presser foot stitch tongues 80 and 80 of the couple which projected from the both sides of a circular face 70 are attached in them like the attachment structure 77 shown in drawing 5 and drawing 6 . The blank prevention walls 71 and 71 of a couple are formed also in this pad 69 at the both sides of a circular face 70. Furthermore, the arm 78 is equipped with the shoe 79 made of a resin. The thickness (T) of the arm 78 of the tensioner lever 67 can use this attachment structure 77, even when thin.

[0013] Therefore, the direction of the force is a direction parallel to a shaft, and a press shaft and a tensioner lever are hardly added in the direction which intersects a press shaft, even if a tensioner lever vibrates and the force F3 (refer to drawing 2) acts on a press shaft by vibration of a chain, since it is in contact by the flat surface and the circular face. For this reason, wear does not arise between a press shaft and a frame and the always proper strain force can be given to a chain. As [spoil / the smooth nature of projection operation of a press shaft / as engagement of a rack and a cam does not become uncertain / furthermore,] In addition, although tensioner equipment [more than] is for giving the proper strain force to a chain, the proper strain force can be similarly given about a belt.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is tensioner equipment of this design which expressed the part with the cross section.

[Drawing 2] It is explanatory drawing in the state where the force of a tensioner lever has joined the press shaft of tensioner.

[Drawing 3] It is the 1st example perspective diagram of the attaching structure of a pad.

[Drawing 4] In the state of drawing 3 where the pad was attached in tensioner, it is the fragmentary sectional view of the longitudinal direction of tensioner.

[Drawing 5] It is the 2nd example perspective diagram of the attaching structure of a pad.

[Drawing 6] In the state of drawing 5 where the pad was attached in tensioner, it is the fragmentary sectional view of the longitudinal direction of tensioner, and a right-angled direction.

[Drawing 7] It is conventional tensioner equipment which expressed the part with the cross section.

[Drawing 8] In the attaching structure of the conventional pad, it is the perspective diagram showing an assembly sequence.

[Description of Notations]

23 Chain 40 Tensioner Equipment

41 Tensioner 44 Press Shaft

47 67 Tensioner lever 48 Flat surface

49 69 Pad 50 70 Circular face

[Translation done.]

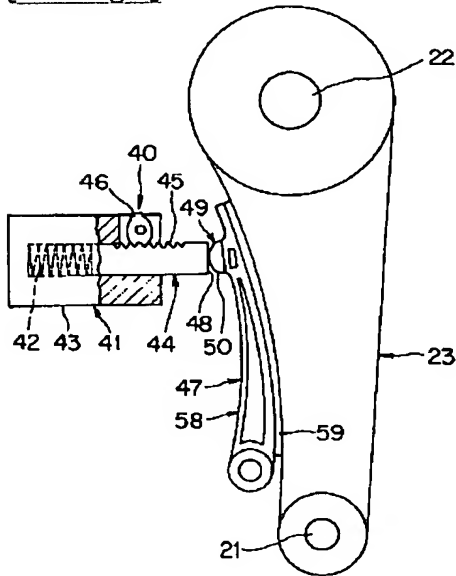
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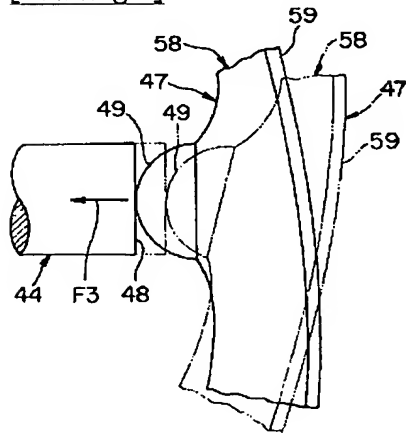
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DRAWINGS

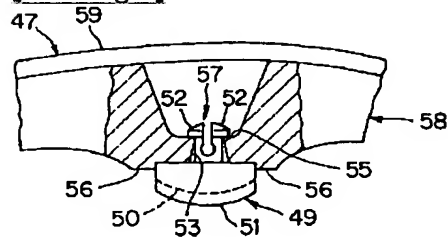
[Drawing 1]



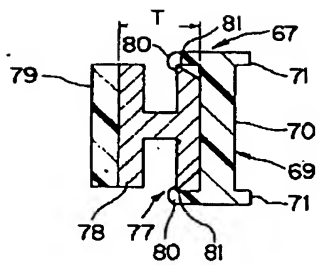
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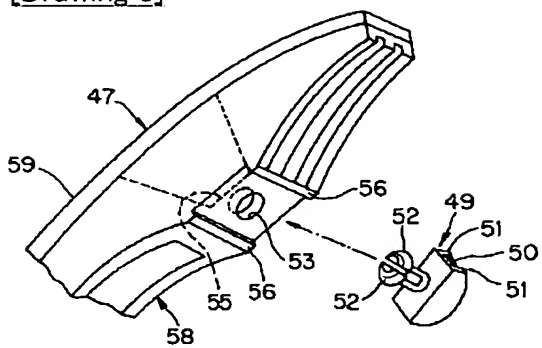
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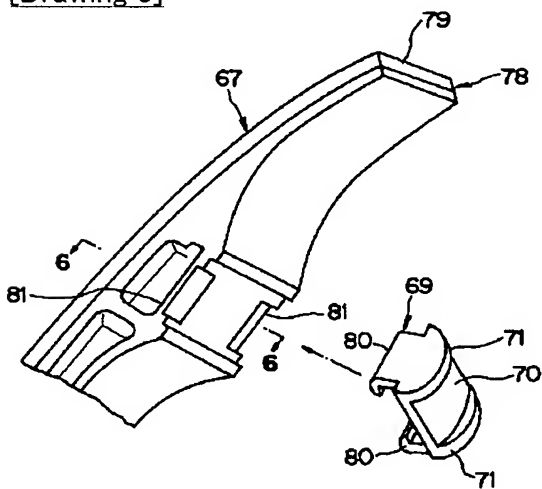
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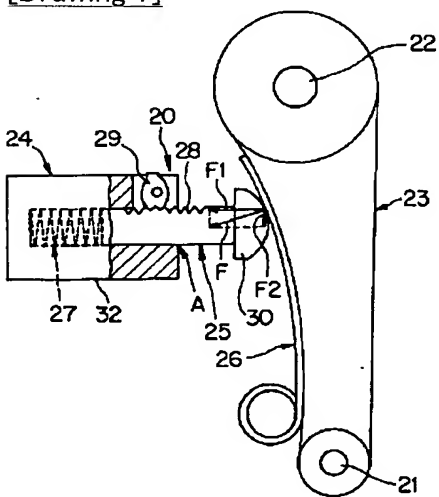
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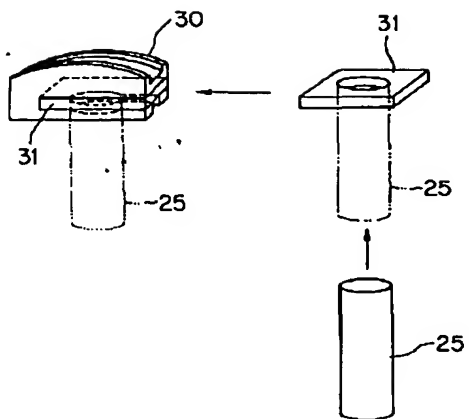
[Drawing 5]



[Drawing 7]



[Drawing 8]



[Translation done.]